

Adverse health effects of persistent organic pollutants in Puget Sound harbour seals

Maki Tabuchi, Lizzy Mos, University of Victoria, Fisheries and Oceans Canada*

Neil Dangerfield, Fisheries and Oceans Canada

Steve Jeffries, Dyanna Lambourn, Washington Department of Fish and Wildlife

Nick Veldhoen, Caren Helbing, University of Victoria

Peter Ross, Fisheries and Oceans Canada

Keywords: Harbour seals, *Phoca Vitulina*, persistent organic pollutants, endocrine disruption, marine mammals, Puget Sound

Persistent organic pollutants (POPs), such polychlorinated bipenyls (PCBs), -dioxins, and -furans, are widespread environmental contaminants that bioaccumulate in aquatic food webs and can reach very high levels in marine mammals. As such, marine mammals can serve as sentinels of environmental contamination and provide valuable ecotoxicological information relevant to both humans and wildlife. We have investigated free-ranging harbour seals (*Phoca vitulina*) in Strait of Georgia, British Columbia, and Puget Sound, Washington to assess whether current levels of POPs affect their health by using physiological and molecular measures. Harbour seals inhabiting south Puget Sound exhibited a range of adverse health effects that appear to be the direct result of exposure to high levels of contaminants. These included increased the level of the primary mediator of POP toxicity, the aryl hydrocarbon receptor, decreased thyroid and vitamin A hormone levels, and increased expression levels of the respective receptors. Current environmental concentrations of POPs therefore present a risk to the health of Puget Sound harbour seals.